

A Gaming Machine And A Method of Restoring A Game

TECHNICAL FIELD

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The present invention relates broadly to the field of gaming machines and to a method of restoring a game.

BACKGROUND

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In a game club, players have a variety of gaming machines to select from. However, players have been known to have an attachment or a liking to particular machines, particularly if they have been playing on the particular machine for a prolonged period. For example, a player may believe a particular machine to be his/her "lucky machine", or the player may believe that game time on the particular machine may lead to a win soon. Thus, a player may make attempts to reserve a particular machine, e.g. when he or she has to step away from the machine to attend to other matters. Another example may be a player seeking to reserve a first gaming machine if the player wishes to take a break from that particular first machine, and play on another second machine instead. However, the player may still wish to retain or reserve a seat at the first machine.

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Typically, machine reservations may be in the form of leaving notices or indications (such as placing a chair against the gaming machine) at the machine, to indicate to other players that the gaming machine is not for use.

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One problem that may arise from such reservations is that the "reserved" machine is idle when not in use. Another problem that may arise is that the reservation notices or indications may not sufficiently deter another player from playing the gaming machine. This is undesirable as it may lead to conflict between players.

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It may be proposed that machine reservations can be prevented by rules and regulations. However, as players are effectively clients or customers, handling of such matters can be crucial, to ensure satisfaction of the clients.

Yet another proposal is to reduce the ratio of the number of players to the number of machines by providing more machines or even personal machines. However, such a proposal is not cost effective. Furthermore, a situation of two players being attracted to the same machine at the same time can still exist.

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Therefore, in view of the above, there exists a need for a gaming machine and a method of restoring a game to a stored status that seek to address at least one of the above problems.

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SUMMARY

In accordance with a first aspect of the present invention, there is provided a gaming machine comprising a screen for displaying one or more games implemented on the gaming machine; a game module for determining player identification for use at the gaming machine; and for retrieving information stored based on the player identification; and for restoring a game to a stored status based on the retrieved stored information such that the game is substantially replicated to when the information was stored.

The game module may retrieve one or more display elements as the stored information; and may create a display substantially identical to an original display of the game when the information was stored, based on the one or more display elements.

The stored information may comprise one or more of a group consisting of game positional information, icons, game symbols, player points information, previous game play history information.

The gaming machine may further comprise a generator for generating random numbers, and the stored information comprises a randomly generated number, wherein the game module retrieves the stored randomly generated number and inputs the stored randomly generated number to the generator to generate a new random number as a determinant of a result.

The gaming machine may further comprise a player transaction module for receiving and processing an identification token from a player.

The identification token may be an identification card.

The game module may retrieve stored information from the token.

5 The game module may retrieve stored information from a server networked to the gaming machine.

 The player identification may be determined at the gaming machine or at the server.

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 The game module or the server may further comprise authentication means for authenticating a player identity.

 The game module may be configured to prompt for a restoration input, and the
15 game module may be capable of restoring the game to the stored status based on the stored information based on the restoration input.

 The game module may be further configured to store status information of a game in progress, said storage being associated with the player identification.

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 The game module may be further configured to store the status information of the game based on actuation of a selectable storage input.

 The selectable storage device may be associated with an end-game input.

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 In accordance with a second aspect of the present invention, there is provided a method of restoring a game to a stored status, the method comprising determining player identification for use at a gaming machine; retrieving information stored based on the player identification; and restoring a game to a stored status based on the retrieved
30 stored information such that the game is substantially replicated to when the information was stored.

 Retrieving stored information based on the player identification may comprise retrieving one or more display elements as the stored information; and said restoring the
35 game may comprise creating a display substantially identical to an original display of the game when the information was stored, based on the one or more display elements.

The stored information may comprise one or more of a group consisting of game positional information, game icons, game symbols, player points information, previous game play history information.

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The stored information may further comprise a randomly generated number generated using a generator; and the step of retrieving information comprises retrieving the stored randomly generated number; and wherein the step of restoring a game comprises inputting the stored randomly generated number to the generator to generate
10 a new random number as a determinant of a result.

The method may further comprise receiving and processing an identification token from a player.

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The identification token may be an identification card.

The step of retrieving stored information may comprise retrieving stored information from the token.

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The step of retrieving stored information may comprise retrieving stored information from a server networked to the gaming machine.

The determining player identification may be performed at the gaming machine or at the server.

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The method may further comprise authenticating a player identity using an authentication means.

The method may further comprise prompting for a restoration input; and wherein
30 the step of restoring the game to the stored status is based on the restoration input.

The method may further comprise storing status information of a game in progress, said storage being associated with the player identification.

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The step of storing status information may be based on actuation of a selectable storage input.

The selectable storage input may be associated with an end-game input.

In accordance with a third aspect of the present invention, there is provided a
5 computer readable data storage medium having stored thereon computer code means for
instructing a processing module of a gaming machine to execute a method for restoring a
game to a stored status, the method comprising the steps of determining player
identification for use at a gaming machine; retrieving information stored based on the
10 player identification; and restoring a game to a stored status based on the retrieved
stored information such that the game is substantially replicated to when the information
was stored.

BRIEF DESCRIPTION OF THE DRAWINGS

15 Example embodiments of the invention will be better understood and readily
apparent to one of ordinary skill in the art from the following written description, by way
of example only, and in conjunction with the drawings, in which:

20 Figure 1 is a schematic front view diagram of a front panel of a gaming machine in an
example embodiment.

Figure 2 is a schematic front view diagram of a gaming machine with a front panel
opened in part from the gaming machine in an example embodiment.

25 Figure 3(a) is a schematic network diagram illustrating a network system in an
example embodiment.

30 Figure 3(b) is a schematic illustration of an exemplary game implemented on a
gaming machine in the example embodiment.

Figure 4 shows a schematic flowchart illustrating an example game status retrieval
process in an example embodiment.

35 Figure 5 shows a schematic flowchart illustrating an example game status storage
process in an example embodiment.

Figure 6 is a schematic drawing of a computer system suitable for implementing an example embodiment.

5 Figure 7 is a schematic flowchart for illustrating a method of restoring a game to a stored status in an example embodiment.

Figure 8 is a schematic drawing of a game module in an example embodiment.

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DETAILED DESCRIPTION

Example embodiments described herein may provide a gaming machine with a function for restoring a game status to a previously stored state. In example embodiments, a
15 player can exit a first game from a first gaming machine A, e.g. to play another game on another machine B. When the player returns to machine A, the first game can be loaded and resumed at machine A, substantially identical to the state or where the first game was exited. Alternatively, the first game can be loaded and resumed at the other machine B, substantially identical to the state or where the first game was exited.

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The terms "coupled" or "connected" as used in this description are intended to cover both directly connected or connected through one or more intermediate means, unless otherwise stated.

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The description herein may be, in certain portions, explicitly or implicitly described as algorithms and/or functional operations that operate on data within a computer memory or an electronic circuit. These algorithmic descriptions and/or functional operations are usually used by those skilled in the information/data processing arts for efficient description. An algorithm is generally relating to a self-consistent sequence of steps leading to a desired
30 result. The algorithmic steps can include physical manipulations of physical quantities, such as electrical, magnetic or optical signals capable of being stored, transmitted, transferred, combined, compared, and otherwise manipulated.

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Further, unless specifically stated otherwise, and would ordinarily be apparent from the following, a person skilled in the art will appreciate that throughout the present specification, discussions utilizing terms such as "scanning", "calculating", "determining",

“replacing”, “generating”, “initializing”, “outputting”, and the like, refer to action and processes of an instructing processor/computer system, or similar electronic circuit/device/component, that manipulates/processes and transforms data represented as physical quantities within the described system into other data similarly represented as physical quantities within the system or other information storage, transmission or display devices etc.

The description also discloses relevant device/apparatus for performing the steps of the described methods. Such apparatus may be specifically constructed for the purposes of the methods, or may comprise a general purpose computer/processor or other device selectively activated or reconfigured by a computer program stored in a storage member. The algorithms and displays described herein are not inherently related to any particular computer or other apparatus. It is understood that general purpose devices/machines may be used in accordance with the teachings herein. Alternatively, the construction of a specialized device/apparatus to perform the method steps may be desired.

In addition, it is submitted that the description also implicitly covers a computer program, in that it would be clear that the steps of the methods described herein may be put into effect by computer code. It will be appreciated that a large variety of programming languages and coding can be used to implement the teachings of the description herein. Moreover, the computer program if applicable is not limited to any particular control flow and can use different control flows without departing from the scope of the invention.

Furthermore, one or more of the steps of the computer program if applicable may be performed in parallel and/or sequentially. Such a computer program if applicable may be stored on any computer readable medium. The computer readable medium may include storage devices such as magnetic or optical disks, memory chips, or other storage devices suitable for interfacing with a suitable reader/general purpose computer. The computer readable medium may even include a wired medium such as exemplified in the Internet system, or wireless medium such as exemplified in bluetooth technology. The computer program when loaded and executed on a suitable reader effectively results in an apparatus that can implement the steps of the described methods.

The example embodiments may also be implemented as hardware modules. A module is a functional hardware unit designed for use with other components or modules. For example, a module may be implemented using digital or discrete electronic components, or it can form a portion of an entire electronic circuit such as an Application Specific

Integrated Circuit (ASIC). A person skilled in the art will understand that the example embodiments can also be implemented as a combination of hardware and software modules.

Further, in the description herein, the word “substantially” whenever used is understood to include, but not restricted to, “entirely” or “completely” and the like. In addition, terms such as “comprising”, “comprise”, and the like whenever used, are intended to be non-restricting descriptive language in that they broadly include elements/components recited after such terms, in addition to other components not explicitly recited. Further, terms such as “about”, “approximately” and the like whenever used, typically means a reasonable variation, for example a variation of +/- 5% of the disclosed value, or a variance of 4% of the disclosed value, or a variance of 3% of the disclosed value, a variance of 2% of the disclosed value or a variance of 1% of the disclosed value.

In the description, state is not merely game progress and can include exact game setup, appearance etc. Further, in the description, the terms “status” and “state” may be used interchangeably.

Figure 1 is a schematic front view diagram of a front panel of a gaming machine in an example embodiment. The gaming machine 100 comprises the front panel 101 that in turn comprises a top screen 102, a main screen 104, a player transactions panel 106 and a player interaction panel 108. The gaming machine 100 may optionally comprise a printer outlet 110, a tower light 112 and a poster display portion 114. The gaming machine 100 allows a player to play one or more games installed on, or network-implemented by, the gaming machine 100.

In the example embodiment, the top screen 102 can be used to display game celebrations, promotional/advertising information or other information that is typically not primarily related to a progression of the games of the gaming machine. The main screen 104 is used to display the games of the gaming machine 100, for the player’s attention. Typically, the main screen 104 is the screen that the player focuses on for playing the games.

In the example embodiment, the player transactions panel 106 is provided for the player to transact with the gaming machine 100. The term “transactions” is taken to mean extraction of remaining points/credits that the player possesses or insertion of points/credits

that the player possesses, for example, in a magnetic identification card or a radio frequency identification (RFID) card or any stored-value card. The term should not be limited to monetary transactions. The player transactions panel 106 comprises a liquid crystal display (LCD) information screen 116 and a card insert slot 118. The card insert slot 118 is used for receiving, in the case of a card insert slot, an identification card containing the points/credits and/or identification belonging to the player. The points/credits can be extracted from the card into the gaming machine 100 for playing the games installed in the gaming machine 100. Upon the player deciding to end play at the gaming machine 100, the player transactions panel 106 can store the latest/updated points/credits information in the stored-value card.

For example embodiments relating to using player identification cards, the player transactions panel 106 can retrieve points/credits information of the player from an external server or database based on player identification. The retrieved information can then be used at the gaming machine 100 for playing the games. For such embodiments, upon the player deciding to end play at the gaming machine 100, the player transactions panel 106 can transmit the latest/updated points/credits information to be stored on the external server or database based on the player identification. It will be appreciated that the card insert slot 118 can be in other forms depending on the type of identification card used by the player. For example, if the player is using a RFID card, the transactions module 118 can be a RFID reader/writer. The LCD information screen 116 is used to display e.g. the points/credits information contained in the card.

The player interaction panel 108 comprises push buttons e.g. 120 provided to allow the player to actuate the buttons e.g. 120 for interacting with the games being played on the gaming machine 100. For example, the player can use the buttons e.g. 120 to make player selections being displayed on the main screen 104. A bill validator 122 can be provided for a player to use paper money to buy credits for playing the games of the gaming machine 100. This is similar to, for example, using paper money at a vending machine to buy drinks/food.

It will be appreciated that although a card-in (using the card insert slot 118) and bill-in (using the bill validator 122) has been discussed above, the gaming machine is not limited as such and can comprise mechanisms to allow coin-in, key-in, ticket-in etc. for playing the games in the gaming machine.

It will be appreciated that the main screen 104 can be in the form of a touch-sensitive screen that may complement or replace the player interaction panel 108. The touch-sensitive screen can be a capacitive-type sensing screen, pressure-type sensing screen or the like. That is, the main screen 104 may be a touch-sensitive screen that allows the player to interact with the gaming machine 100 using touch commands.

In the example embodiment, the printer outlet 110 may be provided for the gaming machine 100 to output information in printed form to the player. For example, the gaming machine 100 may print a sticker or reward voucher for the player. The gaming machine 100 may also print a receipt or record of the points transaction for the player. The tower light 112 may be provided to light up during game celebrations. This may attract the attention of spectators or the player. The tower light 112 can also be used for highlighting technical issues, requesting assistance or service etc. The poster display portion 114 may be provided for e.g. game information to be displayed.

In the example embodiment, the front panel 101 may be opened or detached in whole or in part from the gaming machine 100 body to allow, for example, maintenance on the circuits or components encased in the gaming machine 100.

The inventors have recognized that the player identification cards can also allow for other types of information to be retrieved, in addition to points/credit information.

In the example embodiment, a game status from a previous gaming session, can be restored based on the player identification. For example, upon the player deciding to end play at the gaming machine 100, the present game status at the point of the player ending play, is transmitted to the external server or database for storage, based on the player identification. The game status can include the entire appearance of the game as displayed on the main screen 104. When the player next wishes to return to the game, the player inserts or provides the identification card to the transaction panel. Upon identification, the gaming machine can then retrieve the previously stored game status, from the server/database. It will be appreciated that the determination of the identification can be performed at an external server or locally at the gaming machine based on the identification card. The gaming machine 100 can then restore or load the game to where the player previously ended play, based on the retrieved game status. This can include displaying substantially identically the entire appearance of the game as last displayed on the main screen 104.

Alternatively, in another example embodiment, the game status may be stored and retrieved from the player identification card itself. In this example embodiment, the gaming machine need not be further connected to a server or database. The game status may be stored as a set of instructing parameters with the identification.

In example embodiments, the game status comprises, but is not limited to, the displayed elements on the main screen 104 at the point of the player ending play. The displayed elements may comprise icons on the screen, positions of, for example, graphical symbols of a reel game, current credit/points information, previous play history or other information that is displayed on the main screen 104 at the point of ending play. The game status can also include other display information that can enable the game machine to substantially replicate the display, such that the display is substantially identical to that display as when the player exits the game. Advantageously, this can allow the look-and-feel or getup of the game to be restored to be substantially identical as when the player exits the game, which can provide the user with a higher level of customer satisfaction, due to the customization and personalization it creates, and the perception that the game was exactly where it ended off previously.

Figure 2 is a schematic front view diagram of a gaming machine with a front panel opened in part from the gaming machine in an example embodiment. The gaming machine 200 functions substantially identically to the gaming machine 100 described with reference to Figure 1. Like numerals are used to refer to substantially identical components already described. As shown, the front panel 101 is opened from the gaming machine 200, and opened in part containing the main screen 104 and the player transactions panel 106, to reveal the internal portion of the gaming machine 200.

The gaming machine 200 comprises a power supply unit 202 for powering the various components of the gaming machine 200. The power supply unit 202 is coupled to a main board circuits cage 204. The main board circuits cage 204 is used to contain and protect a game module 206. The game module 206 implements the one or more games on the gaming machine 200 and also implements game functions such as points/rewards calculations. The game module 206 also drives visual contents, for example display of the games, on the main screen 104 and, for example, audio content from the gaming machine 200. Speakers (not shown) are provided to output audio. The game module 206 comprises integrally, or is coupled to, a media module 208 and a message interface module

210. The gaming machine 200 further comprises an interface circuit board 212 coupled to the game module 206 via the message interface module 210, and an optional bill validator module 214 coupled to the game module 206. The bill validator module 214 comprises circuitry for implementing bill validation and counting. In the example embodiment, if a printer outlet 110 is provided, a printer 216 is also comprised in the gaming machine 200 for performing the printing functions.

It will be appreciated that the gaming machine 200 may further comprise other components that are not described here for clarity of illustration of the example embodiments.

The interface circuit board 212 is provided to communicate with a game control server (not shown) that can e.g. monitor the results of the games of the gaming machine 200, for example for logging results of theme-type base games of the gaming machine 200. In some example embodiments, the game control server (not shown) can e.g. control the gaming machine 200, for example for informing of a winning instance of an external mystery-type server/network game implemented at the game control server. The server/network game is typically independent of the base games installed at the gaming machine 200. The communication with the game control server may be over a wired or wireless network. In addition or alternatively, the game control server can store and/or provide player specific information to the game module 206, based on a request from the player module 206.

In an example embodiment, the player specific information may include the present game status, player points/credits, etc.

Figure 3(a) is a schematic network diagram illustrating a network system in an example embodiment. The system 300 comprises at least one gaming machine 302a, 302b, 302c, a game control server 306 and an information storage server 308. The system 300 can be a wired or wireless network connecting the various gaming machines and servers. In the description here, only one gaming machine 302a is described for ease of understanding. The gaming machines function similarly and are substantially similar to the gaming machine 100 of Figure 1.

The gaming machine 302a comprises a player LCD touch-screen 310 (compare 104 of Figure 1) for playing games on the gaming machine 302a. Further, a player card (or

transactions) panel 320 (compare 106 of Figure 1), comprising a LCD information screen 316 (compare 116 of Figure 1) and a card insert slot 318 (compare 118 of Figure 1). Within the gaming machine 302a, an interface circuit board 312 is further provided, coupled to a game module 314, for communicating with the game control server 306. The touch screen 310 and player card panel 320 are coupled to the game module 314.

Figure 3(b) is a schematic illustration of an exemplary game implemented on the gaming machine 302a in the example embodiment. The game can be a reel game. It will however be appreciated that the games on the gaming machine are not limited as such and can be in other forms such as arcade-type games. For example, the game can be an arcade-type aircraft simulator game that requires a predetermined amount of credits/points of buy-in for the player to play the game for a predetermined period of time. Furthermore, the games implemented on the gaming machine 302a such as the reel game may, in some example embodiments, provide no rewards or awards to the player. That is, such games may be entertainment games whereby the player buys in to play for entertainment, for graphics etc., without expecting any rewards or awards.

In the example embodiment, the reel game is displayed on the main screen or known as the touch-screen 310 of the gaming machine 302a. A sample screenshot 320 shows an example of the various elements of the reel game 322. The gaming machine incorporates touch screen technology to enable a player to play the reel game via the touch-screen 310. The reel game 322 involves matching of a pre-determined sequence of graphical symbols e.g. 324 on the reels. The reels are shown in a 3X3 matrix and are rotatable mechanically behind or graphically on the touch-screen 310. A buy-in display window 326 is provided to show the player the points/credits required to play, for example, each turn of the reel game. A play button represented as an icon 328 is provided to allow the player to operate or initiate the gaming machine 302a. A credit/points display window 332 is provided to show the player the points/credits that are available to the player. A transaction display window 334 shows the result of the previous play, e.g. the credit or debit of a number of credit/points arising from the previous play or turn of the reel game. The player can touch the play button icon 328 to play, for example, a turn of the reel game.

In the example embodiment, a transactions module (compare 118 of Figure 1) receives a game card or a stored-value credits/points card from the player for transferring credits to play the games in the gaming machine 302a. The stored-value card may also allow the player to transfer unused credits from a previous gaming session to play the

games in the gaming machine 302a. Any existing points/credits are transferable both to and from the gaming machine 302a using the stored-value card.

In addition or alternatively, the stored-value card may allow the player to store information which can allow the game status to be restored, when play at the gaming machine is ended. Thus, when the player returns to the gaming machine at a later point in time, or to another gaming machine, the player can restore the status of a game to that of the stored gaming session.

An end-play button (graphically represented as an icon) 330 is provided to allow the player to request for transaction processing for the stored-value card, e.g. outstanding points/credits to be transferred back to the stored-value card, and/or to save the present game status, when the player stops playing the gaming machine 302a.

For example embodiments relating to using player identification cards, the transactions module can retrieve points/credits information and/or the previous game status of the player from an external server or database, e.g. the game control server 306, based on player identification. The retrieved information can then be used at a gaming machine e.g. 302a, b, c for playing the games. For such embodiments, upon the player deciding to end play at the gaming machine 302a, the transactions module can transmit the latest/updated points/credits information and/or the present game status to be stored on the external server or database based on the player identification. Alternatively, instead of transmitting the latest/updated points/credits information and/or the present game status to be stored on an external server or database, the transactions module can instead store the information on the player identification card or player identification token.

In an example implementation, a determination of the player identification can be performed at an external server or locally at the gaming machine based on a player identification card. For example, a card ID or identification number may be extracted and sent to the external server and compared against a table. Using the card ID, the player identification can be retrieved at the external server and the stored information based on the player identification can also be retrieved. During play, the player touches the play button icon 328 to rotate the reels for one turn. The game module 314 deducts the points/credits of the player based on the amount shown in the buy-in display 326 window. There can be different permutations of winning combinations/sequences of the symbols e.g. 324 for different types of wins of the reel game 322. For example, three same symbols in a row may

be classified as a flush win while two same symbols in a row may be classified as a minor win. The wins may be governed based on an odds table stored or programmed in the gaming machine 302.

5 In an example embodiment, when a player decides to exit a gaming machine and end play, the player may push or actuate an "exit game" button (not shown in Figure 3) on the game display. Alternatively, the "exit game" button may be available at the transaction modules module. Once the "exit game" option is initiated, the relevant information for use to restore the game status can be stored in the player's card or transmitted for storage at a
10 networked server based on the player identification. In an example embodiment, the relevant information may include information which can allow the current display of the game to be substantially replicated. Such information can be in the form of positional information (such as grid coordinates mapped onto the display) and parameter values of the game icons and/or symbols, player points information, and / or previous game play history. In addition,
15 the relevant information may include random generated numbers, which may be determinant of one or more future games, obtained from a random number generator. Details of the random numbers generation are provided in a subsequent portion of the description below.

In the example embodiment, in order to store the data in the player's card, the
20 relevant information may be processed (e.g. encrypted, encoded and/or compressed) into a storage file format suitable for the information to be written on to the player card. For example, the player card may comprise a magnetic stripe such that the data is written onto the card by modifying the magnetism of particles on the stripe of the card. Thus, the game module of the gaming machine may control the transaction module to modify the magnetic
25 stripe player card in order to store the processed relevant information. It will further be appreciated that the player card or token is not limited to such magnetic stripe cards, and may be implemented as other types of data storage devices or tokens.

As a further alternative, the processed relevant information may be transmitted and
30 stored in a server networked to the gaming machine. Upon successful storage of the game status, the display may then prompt the user to remove the card. Alternatively, the card may be released from the card slot of the transaction module.

When a player returns to a gaming machine, the player can e.g. insert the player
35 card into the player transaction module, and be requested to enter a e.g. password to determine the player's identification. By determining the player's identification (either by

communicating with a networked server or by checking against identification information stored on a player card), the game module of the gaming machine can then proceed to extract the stored information from e.g. the player card or the networked server, as the case may be. It will be appreciated that the stored information may be decrypted, decoded and/or decompressed accordingly before the information can be used by the e.g. game module. For example, stored positional information such as grid coordinates and stored parameter value information may be extracted and applied by the game module to a relevant game to instruct a display to be generated that can substantially replicate the game display or game state, as when the player exited the previous gaming session. If a random number had been stored, the gaming machine can extract that stored random number and continue generating random numbers based on that stored random number.

Figure 4 shows a schematic flowchart 400 illustrating an example game status retrieval process in an example embodiment. The process may be activated when a player begins play at a game machine. In this example embodiment, a gaming machine is connected to a server, which stores the player information and other game information. At step 402, the player game module 310 (Figure 3(a)) detects the presence of a player card which has been inserted into the card insert slot 318 (Figure 3(a)) of the player transaction panel 320 (Figure 3(a)). At step 404, the game module attempts to authenticate the player. This may be achieved by e.g. prompting the user to provide an authentication code or password, which is then compared with the code or password stored on the card. Alternatively, the authentication check may be carried out at the server 306 (Figure 3(a)), via the interface circuit board 312 (Figure 3(a)). Player identification information may be obtained from the card, and sent to a server, along with the provided authentication code. The server then compares the information to authenticate the player. If authentication is unsuccessful, the player cannot use e.g. the restore or store game functions of the gaming machine. At step 406, once the player identification has been determined, the game server checks to determine if the player has accessed the machine previously, and/or if the player has any previously stored games. If it is determined that there are no existing information such as stored games, the player is allowed to begin playing the game machine afresh. Alternatively, depending on implementation, the gaming machine may determine the above locally with the player card.

If it is determined that there is at least one existing stored game, the player can be prompted, via the game module and touch panel, to determine if the player would like to continue/restore a previous game. If the player agrees, at step 408, the game module 314

(Figure 3(a)) retrieves the stored information that allows the game module 314 (Figure 3(a)) to restore the previously stored game status (at step 410). The stored information may be retrieved from the player card or the server depending on implementation.

As described earlier, the previously stored game status may comprise information which can allow the previous game display to be substantially replicated. For example, in an example embodiment, the information may include the player credit/point balance, previous transaction history, previous game icons positions, previous gaming characters/symbols positions/postures/appearances, previous reel positions, etc.

In one example embodiment, the game module may comprise sub-modules for performing the above steps. For example, the game module may comprise an identification module (e.g. a chipset with authentication functions) to determine player identification; a retrieval module (e.g. a chipset connected to e.g. a database or storage card/chip) to retrieve stored information using player identification; and an input loader (e.g. a buffer chipset) for loading the stored information via a processor or processing module to manipulate a display of the gaming machine to generate the restored game and game display.

Figure 5 shows a schematic flowchart 500 illustrating an example game status storage process in an example embodiment. The process is activated when a player is ending play at a game machine. In this example embodiment, a gaming machine is connected to a server, which stores the player information and other information. At step 502, the machine detects that a player wishes to leave the machine, e.g. by detecting that an exit game button on the touch panel has been activated by the player. At step 504, the game module, upon receipt of the player's request to stop play, prompts to question the player if the game information is to be stored for later restoration. Alternatively, depending on implementation, the storage may be automatic. At step 506, if the player wishes for the information to be stored, the relevant information for use to restore the present game status at a later point in time is obtained at the game module and transmitted to the server for storage (at Step 508).

As described earlier, the information to restore the game status may comprise information which can allow the previous game display to be substantially replicated.

Example embodiments described herein can allow the player to store a game status, which can be retrieved at a later point in time in the same and/or other machines. In one example embodiment, the player is provided with a player card, which can be used to identify the player for use at a gaming machine and is further capable of storing other information. The player inserts the card in a gaming machine to play the game. While playing the game, the player can decide to exit the game, to e.g. attend to other matters. The relevant information for use to restore the game status can be stored in the player card or an external server, prior to the player removing the card from the gaming machine. Subsequently, when the player returns to the gaming machine or another gaming machine, insertion of the card can allow the previously stored information to be retrieved from the card or the external server, and the player can then restore to a substantially replicated state and resume the game from the previous exit point.

The example embodiment can also allow the player to play at another gaming machine, before continuing play at the first gaming machine. The player may also return to the other gaming machine, and resume the game from where it was exited previously at that other gaming machine. For example, a player, who is provided with a player card first plays at Machine A. The player then continues playing the game at Machine B, after exiting Machine A. Thus, the player card or the external server may be capable of storing game status information of one or more games from one or more gaming machines, enabling the user to resume the gaming status at either one of the one or more gaming machines.

In some example embodiments, the game status information stored on the player card or the external server does not expire. In other words, a player can restore the game to a previously stored status, without fearing that the information being deleted. Alternatively, the stored game status may be deleted upon an expiry of a pre-determined period. For example, the player may have stored gaming status information from a first gaming machine. Subsequently, if the player has not returned to play at the same machine or to continue playing the game where it was last exited from after e.g. 2 days, the status information is deleted from the card or the external server, and the game can no longer be restored. This can advantageously entice the player to return to play the gaming machine or the game, before the game status is deleted from the card or server. It will be appreciated that the player can be provided with further incentives to return to the gaming machine. For example, points awarded for winning can be adjusted higher for a restored game, as compared to an “unrestored” new game.

Example embodiments described herein may also allow a different player to be provided with the same game status restoration function. For example, when a player X leaves a gaming machine, the game status of X is stored via player card C. A second player Y can then be allowed to play on the same vacated gaming machine with player card D. Player Y is also allowed to store the game status of Y via the player card D when the player exits the game. Thus, both players may return to the gaming machine to continue where they respectively left off or exited from in their respective games.

It will be further appreciated that example embodiments described herein may also allow a player to store and restore e.g. different games. In an example implementation, the player may store multiple game statuses of different games. For example, the relevant information from a first game and a second game may be stored, wherein the relevant information from the first game may allow a player to restore the game status of that first game at a (same or different) gaming machine, and relevant information from the second game may allow the player to restore the game status of the second game at a (same or different) game machine.

In the gaming industry, gaming machines can be provided with a RNG (Random Number Generator) which provides randomly generated numbers from which the outcomes of the games are based upon. The RNG is preferably independent of external factors. When a player actuates a play button to play a game, e.g. a five-reel game, five random numbers are generated sequentially from the RNG with each preceding random number used as an input for the current random number. For example, in a reel game as shown in Figure 3(b), the RNG generates a first random number (or a seed) for determining results of a first reel. The first random number or seed is used as an input to the RNG to generate a second random number for determining results of a second reel. Following on, the second random number is used as an input to the RNG to generate a third random number for determining results of a third reel etc. In an alternative network-based system, where gaming machines are connected to a central server, the RNG may be provided by the central server.

In an example embodiment, the inventors have recognized that it is possible for the latest random number from the RNG to also be stored as part of stored game status information when the player exits play at the gaming machine. For example, for a five-reel game, the fifth random number used for determining results of the fifth reel can be stored as part of stored game status information. When the player returns to a gaming

machine to continue from where the game was exited previously, in addition to the display and/or credit information etc. retrieved, the stored RNG random number can also be retrieved. Thus, the random number can be retrieved for use as an input to the generation of the next random number at the RNG when the player next restores the game status. For example, for a five-reel game, the fifth random number used for determining results of the fifth reel can be stored as part of stored game status information. When the player next restores the game status, upon retrieval of this random number, the RNG can use this random number as an input to generate a new first random number for determining results of the first reel and so on. This can advantageously further the concept of customization and personalization of the game to the player. The player may also be provided with the perception that the game has left off when it was last exited.

In an example implementation, the RNG may be in the form of a crystal oscillator that instructs a number generator processor to periodically generate new random numbers and if there is a seed (or preceding random number) available, the number generator uses that seed as an input for the number generation.

In example embodiments, the function to allow the game status to be stored can provide a player with an option of continuing the game at a later time, should the player decide to stop play. In substantially replicating the game display to the previously stored state, when the player returns to the game at the same or another gaming machine, the player is provided with a perception that the machine is personalized to the player. In some embodiments, where the player can restore a game at a different machine, the player can be less concerned with that different machine being used, as the substantially replicated display can provide a perception that the game has been customized or personalized to the player.

Figure 7 is a schematic flow chart 700 for illustrating a method of restoring a game to a stored status in an example embodiment. At step 702, a player identification is determined for use at a gaming machine. At step 704, information stored is retrieved based on the player identification. At step 706, a game is restored to a stored status based on the retrieved stored information such that the game is substantially replicated to when the information was stored.

Figure 8 is a schematic drawing of a game module 800 in an example embodiment. The game module 800 comprises a communications module 802. The communications module 802 can function as an input and/or output port for the game module 800, such that the game module 800 can communicate with external servers and/or other modules such as a player transaction panel (compare 106), a player interaction panel (compare 108), a main screen (compare 104) etc. The game module 800 further comprises a game display or media module 804 that can instruct the display of game contents on a screen and preferably, output audio via speakers. The game module 800 also comprises a game execute module 806 that can retrieve game parameters and instructions to implement one or more games. In the example embodiment, the game execute module 806 can facilitate saving or restoring game statuses based on current game parameters/information or stored game parameters/information respectively. These may include grid co-ordinates, current graphics display values etc. The game module 800 also comprises a memory module 808 for containing data such as instructions for implementing games. The game module 800 further comprises a message interface 810 that can receive messages from external servers and/or log internal error messages. Optionally, a random number generator 812 may be provided integrally with the game module.

In the example embodiment, the game module 800 can determine player identification for use at the gaming machine via the communications module 802 (i.e. either locally at the gaming machine from the player transaction panel (compare 106) or an external server). The game module 800 can also retrieve information stored based on the player identification, e.g. via the communications module 802 (i.e. either from a player card locally at the gaming machine from the player transaction panel (compare 106) or from an external server). The game module 800 can also restore a game to a stored status based on the retrieved stored information such that the game is substantially replicated to when the information was stored. This may be done by using the game execute module 806 with the stored information and instructing a media display using the game display or media module 804. The components of the game module 800 can communicate with each other via an internal bus (not shown).

Different example embodiments can be implemented in the context of data structure, program modules, program and computer instructions executed in a computer implemented environment. A general purpose computing environment is briefly disclosed herein. One or more example embodiments may be embodied in one or more gaming machines in a computer system 600, such as is schematically illustrated in Figure 6.

One or more example embodiments may be implemented as software, such as a computer program being executed within the computer system 600, and instructing the computer system 600 to conduct a method of an example embodiment.

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The computer system 600 comprises a computer unit 602 that may be embodied within a gaming machine, input modules such as a touch-screen keyboard 604 and pointing device 606 and a plurality of output devices such as a display 608, and printer 610. A user can interact with the computer unit 602 using the above devices. One or more other input
10 devices (not shown) such as a joystick, game pad, or the like can also be connected to the computer unit 602. The display 608 may include a cathode ray tube (CRT), liquid crystal display (LCD), field emission display (FED), plasma display or any other device that produces an image that is viewable by the user.

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The computer unit 602 can be connected to a computer network 612 via a suitable transceiver device 614, to enable access to e.g. the Internet or other network systems such as Local Area Network (LAN) or Wide Area Network (WAN) or a personal network. The network 612 can comprise a server, a router, a network personal computer, a peer device or other common network node, a wireless telephone or wireless personal digital assistant.
20 Networking environments may be found in offices, enterprise-wide computer networks and home computer systems etc. The transceiver device 614 can be a modem/router unit located within or external to the computer unit 602, and may be any type of modem/router such as a cable modem or a satellite modem.

25

It will be appreciated that network connections shown are exemplary and other ways of establishing a communications link between computers can be used. The existence of any of various protocols, such as TCP/IP, Frame Relay, Ethernet, FTP, HTTP and the like, is presumed, and the computer unit 602 can also be operated in a client-server configuration to permit a user to retrieve web pages from a web-based server. Furthermore, any of various
30 web browsers can be used to display and manipulate data on web pages.

The computer unit 602 in the example comprises a processor 618, a Random Access Memory (RAM) 620 and a Read Only Memory (ROM) 622. The ROM 622 can be a system memory storing basic input/ output system (BIOS) information. The RAM 620 can store one
35 or more program modules such as operating systems, application programs and program data.

The computer unit 602 further comprises a number of Input/Output (I/O) interface units, for example I/O interface unit 624 to the display 608, and I/O interface unit 626 to the keyboard 604. The components of the computer unit 602 typically communicate and interface/couple connectedly via an interconnected system bus 628 and in a manner known to the person skilled in the relevant art. The bus 628 can be any of several types of bus structures including a memory bus or memory controller, a peripheral bus, and a local bus using any of a variety of bus architectures.

It will be appreciated that other devices can also be connected to the system bus 628. For example, a universal serial bus (USB) interface can be used for coupling a video or digital camera to the system bus 628. An IEEE 1394 interface may be used to couple additional devices to the computer unit 602. Other manufacturer interfaces are also possible such as FireWire developed by Apple Computer and i.Link developed by Sony. Coupling of devices to the system bus 628 can also be via a parallel port, a game port, a PCI board or any other interface used to couple an input device to a computer. It will also be appreciated that, while the components are not shown in the figure, sound/audio can be recorded and reproduced with a microphone and a speaker. A sound card may be used to couple a microphone and a speaker to the system bus 628. It will be appreciated that several peripheral devices can be coupled to the system bus 628 via alternative interfaces simultaneously.

An application program can be supplied to the user of the computer system 600 being encoded/stored on a data storage medium such as a CD-ROM or flash memory carrier. The application program can be read using a corresponding data storage medium drive of a data storage device 630. The data storage medium is not limited to being portable and can include instances of being embedded in the computer unit 602. The data storage device 630 can comprise a hard disk interface unit and/or a removable memory interface unit (both not shown in detail) respectively coupling a hard disk drive and/or a removable memory drive to the system bus 628. This can enable reading/writing of data. Examples of removable memory drives include magnetic disk drives and optical disk drives. The drives and their associated computer-readable media, such as a floppy disk provide nonvolatile storage of computer readable instructions, data structures, program modules and other data for the computer unit 602. It will be appreciated that the computer unit 602 may include several of such drives. Furthermore, the computer unit 602 may include drives for interfacing with other types of computer readable media.

The application program is read and controlled in its execution by the processor 618. Intermediate storage of program data may be accomplished using RAM 620. The method(s) of the example embodiments can be implemented as computer readable instructions, computer executable components, or software modules. One or more software modules may alternatively be used. These can include an executable program, a data link library, a configuration file, a database, a graphical image, a binary data file, a text data file, an object file, a source code file, or the like. When one or more computer processors execute one or more of the software modules, the software modules interact to cause one or more computer systems to perform according to the teachings herein.

The operation of the computer unit 602 can be controlled by a variety of different program modules. Examples of program modules are routines, programs, objects, components, data structures, libraries, etc. that perform particular tasks or implement particular abstract data types. The example embodiments may also be practiced with other computer system configurations, including handheld devices, multiprocessor systems, microprocessor-based or programmable consumer electronics, network PCs, minicomputers, mainframe computers, personal digital assistants, mobile telephones and the like. Furthermore, the example embodiments may also be practiced in distributed computing environments where tasks are performed by remote processing devices that are linked through a wireless or wired communications network. In a distributed computing environment, program modules may be located in both local and remote memory storage devices.

It will be appreciated by a person skilled in the art that other variations and/or modifications may be made to the specific embodiments without departing from the spirit or scope of the invention as broadly described. The present embodiments are, therefore, to be considered in all respects to be illustrative and not restrictive.

Although the gaming machine is described generally as implementing a reel game, the game can take different forms and graphical representations of games including, but not limited to, table games, card games, numbers games, sports games, medal games, redemption games, vending games, video games, music games, amusement games etc.. The winning combinations may also be governed by different game rules. The game can include e.g. any game of chance or game of skill that can provide the player with entertainment.

In addition, the awards are not limited to credits and can include game points, loyalty points etc. Further, although it has been described that the game status can be stored based on an actuation of an end-game button or icon, the example embodiments are not limited as such and can include storage of the game status based on a selectable storage input e.g. actuation of a save-game now button or icon while a game is in progress and the game is not exited upon storage.

The gaming machines may be implemented as physical or virtual gaming machines, such as via the Internet, interactive TV, Local Area Network (LAN)-based or other service networks. The virtual gaming machines may be implemented on desk top devices or portable devices. For gaming machines implemented as physical gaming machines, although touch screen keys have been described in the example embodiments, other actuators such as mechanical keys or pull/push handles may also be used to play the games contained in the gaming machine.

It will further be appreciated that the status information may be stored in e.g. the player identification card, in the server, or in the respective gaming machines.

CLAIMS

1. A gaming machine comprising,
5 a screen for displaying one or more games implemented on the gaming machine;
a game module for determining player identification for use at the gaming machine; and for retrieving information stored based on the player identification; and for restoring a game to a stored status based on the retrieved stored information such that the game is substantially replicated to when the information was stored; wherein the
10 game module retrieves one or more display elements as the stored information; and creates a display substantially identical to an original display of the game when the information was stored, based on the one or more display elements.
2. The gaming machine as claimed in claim 1, wherein the stored
15 information comprises one or more of a group consisting of game positional information, icons, game symbols, player points information, previous game play history information.
3. The gaming machine as claimed in claims 1 or 2, further comprising a generator for generating random numbers, and the stored information comprises a
20 randomly generated number, wherein the game module retrieves the stored randomly generated number and inputs the stored randomly generated number to the generator to generate a new random number as a determinant of a result.
4. The gaming machine as claimed in any one of the preceding claims,
25 wherein the gaming machine further comprises
a player transaction module for receiving and processing an identification token from a player.
5. The gaming machine as claimed in claim 4, wherein the identification
30 token is an identification card.
6. The gaming machine as claimed in claims 4 or 5, wherein the game module retrieves stored information from the token.

7. The gaming machine as claimed in any one of the preceding claims, wherein the game module retrieves stored information from a server networked to the gaming machine.

5 8. The gaming machine as claimed in claim 7, wherein the player identification is determined at the gaming machine or at the server.

9. The gaming machine as claimed in any one claims 7 or 8, wherein the game module or the server further comprise authentication means for authenticating a
10 player identity.

10. The gaming machine as claimed in any one of the preceding claims, wherein the game module is configured to prompt for a restoration input, and the game module is capable of restoring the game to the stored status based on the stored
15 information based on the restoration input.

11. The gaming machine as claimed in any one of the preceding claims, wherein the game module is further configured to store status information of a game in progress, said storage being associated with the player identification.
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12. The gaming machine as claimed in claim 11, wherein the game module is further configured to store the status information of the game based on actuation of a selectable storage input.

25 13. The gaming machine as claimed in claim 12, wherein the selectable storage device is associated with an end-game input.

14. A method of restoring a game to a stored status, the method comprising,
determining player identification for use at a gaming machine;
30 retrieving information stored based on the player identification; and
restoring a game to a stored status based on the retrieved stored information such that the game is substantially replicated to when the information was stored;
wherein said retrieving stored information based on the player identification comprises retrieving one or more display elements as the stored information; and said restoring the
35 game comprises creating a display substantially identical to an original display of the game when the information was stored, based on the one or more display elements.

15. The method as claimed in claim 14, wherein the stored information comprises one or more of a group consisting of game positional information, game icons, game symbols, player points information, previous game play history information.

5 16. The method as claimed claims 14 or 15, wherein the stored information further comprises a randomly generated number generated using a generator; and the step of retrieving information comprises retrieving the stored randomly generated number; and

10 wherein the step of restoring a game comprises inputting the stored randomly generated number to the generator to generate a new random number as a determinant of a result.

17. The method as claimed in any one of claims 14 to 16, further comprising receiving and processing an identification token from a player.

15 18. The method as claimed in claim 17, wherein the identification token is an identification card.

20 19. The method as claimed in claims 17 or 18, wherein the step of retrieving stored information comprises retrieving stored information from the token.

25 20. The method as claimed in any one of claims 14 to 19, wherein the step of retrieving stored information comprises retrieving stored information from a server networked to the gaming machine.

21. The method as claimed in claim 20, wherein the determining player identification is performed at the gaming machine or at the server.

30 22. The method as claimed in any one of claims 14 to 21, further comprising authenticating a player identity using an authentication means.

23. The method as claimed in any one of claims 14 to 22, further comprising prompting for a restoration input; and

35 wherein the step of restoring the game to the stored status is based on the restoration input.

24. The method as claimed in any one of claims 14 to 23, further comprising storing status information of a game in progress, said storage being associated with the player identification.

5 25. The method as claimed in claim 24, wherein the step of storing status information is based on actuation of a selectable storage input.

26. The method as claimed in claim 25, wherein the selectable storage input is associated with an end-game input.

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27. A computer readable data storage medium having stored thereon computer code means for instructing a processing module of a gaming machine to execute a method for restoring a game to a stored status, the method comprising the steps of

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determining player identification for use at a gaming machine;

retrieving information stored based on the player identification; and

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restoring a game to a stored status based on the retrieved stored information such that the game is substantially replicated to when the information was stored; wherein said retrieving stored information based on the player identification comprises retrieving one or more display elements as the stored information; and said restoring the game comprises creating a display substantially identical to an original display of the game when the information was stored, based on the one or more display elements.